Post acquisition profitability of banks: a comparison of domestic and cross border acquisitions in the European Union

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Post-acquisition profitability of banks: a comparison of domestic and cross-border acquisitions in the European Union

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Abstract: This study evaluates shareholder wealth and profitability of 62 large EU banks mergers and acquisitions that were involved in domestic or cross-border transactions during the period 1997−2007. We use the standardised cumulative abnormal returns (SCAR) technique and a long window of 61 days to capture merger announcement wealth effects of both domestic and cross-border acquiring banks. We argue that standardising abnormal returns helps eliminate any biases in the estimation of wealth effects by giving equal weighting to all events surrounding the merger. Our results establish that, while the wealth effects of both types of mergers are negative, cross-border mergers create significant loss in shareholder value for the acquiring banks. Using standard determinants of profitability, we also conduct hierarchical regressions to ascertain the degree of merger impact on post-acquisition profitability. The results show that acquiring banks' capital strength and cost efficiency are most important factors influencing profitability in cross-border mergers. In contrast, profitability in the case of domestic mergers is driven more by the acquiring banks' ability to take on greater risk.

Keywords: merger; acquisition; shareholder wealth; profitability; standardised abnormal returns; cross border; domestic; European Union; EU.

merger; acquisition; profitability; standardised abnormal returns; cross-border; domestic.

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1 Introduction

There has been a surge in the number of bank mergers and acquisitions within the European Union (EU) in the last decade. Records show that domestic mergers have maintained steady growth in relation to cross-border or international mergers. For instance, between 1985 and 2001, only about one fifth of all merger transactions were cross-border while the rest were domestic, and banking sector mergers accounted for 13% of such deals (Focarelli and Pozzolo, 2001). Mergers of domestic banks have tended to outperform international ones in terms of efficiency, particularly in developed economies. Amihud et al. (2002) assert that cross-border mergers in some respects give a picture of weak competition in the market. This supports the arguments of Berger et al. (2001), who find that cultural differences, supervisory structures and national currencies have inadvertently inhibited cross-border mergers in Europe.

Countries with effective privatisation programmes have tended to attract foreign investors, particularly in the fragile banking sector. Most European countries with a privatised banking sector have been of particular interest for cross-border merger deals. Bonin and Abel (2000) find that privatisation has been a key influence in the high market shares of foreign banks in Europe. Conversely, economies with more stringent information requirements and a more effective supervisory system are more likely to win the confidence of foreign investors. They often have laid down more transparent disclosure and regulatory requirements which give vital information about their operations and performance. Thus banks in countries with such high regulatory standards will be more attractive to foreign acquirers. However, Berger et al. (2004) caution that if

such regulatory standards are too high, it may be a disincentive and could impede foreign interests from undertaking cross-border merger deals.

The present study adds to the growing number of empirical studies of bank mergers in the EU in unique ways. First, it uses standardised abnormal returns for calculating shareholder value rather than the unstandardised returns popular in most merger studies. The standardised technique is unique as it eliminates biases resulting from uncontrolled events surrounding the announcement of mergers. In practice, the standardised abnormal returns create a level ground by sieving abnormal returns resulting from possible prejudices of the event. This is very important for prospective investors in making decisions on the abnormal returns basis. Second, our paper uses a long event window of 60 days which is sufficient to capture post merger market reactions. Most studies use a short event window, which cloaks the stock reaction after the deals have taken place. Third, our study evaluates post merger profitability by comparing domestic and cross border acquiring banks, in contrast to previous merger studies which have focused exclusively on samples of either cross-border merger (Danbolt, 1995; Black et al., 2003; Amihud et al., 2002) or domestic mergers (Sudarsanma and Mahate, 2003; Hahn, 2007). Even where both samples of mergers are compared in some studies, analysis of shareholder returns is often done with short event windows. Finally, we have used profitability indicators for the acquiring banks using the banks' five-year financial reports, which allows for an adequate assessment of the acquisition performance.

The length of the event window can be critical in the analysis of the stock market response to a merger. For example, comparing abnormal returns with short and long windows may suggest a different assessment of performance for the same acquirers. Zollo and Meier (2008) confirm that a firm's acquisition performance is often measured by computing abnormal returns over a short window around the announcement date. The difference in the acquisition performance between the short-term and the long-term lies in the market expectations and the actual outcome of the merger. While the former is focused on evaluating the premerger collective financial market expectations and events, the latter provides some basis for judging what has actually occurred during and/or after the merger. Thus, the longer window represents information based on ex ante as well as ex post performance of the merging or merged entities.

The use of long windows has been favoured in some studies, as it provides a suitable basis for demonstrating the durability of the returns. Other studies (e.g., Lindblom and Von-Koch, 2002) have examined EU merger performance using a scorecard approach rather than the event window approach to capture the post-acquisition performance. Our study contrasts with previous studies by comparing the post-acquisition performance of both domestic and cross-border banks using a long event window to capture any intermediations after the acquisition. The combination of standardising the abnormal returns and using a long window to analyse stock market reaction to a merger is an added contribution of this paper.

2 Studies in European domestic and cross-border bank mergers

Merger studies of European countries have focused on different aspects of performance such as profitability, shareholder wealth creation, efficiency, productivity, etc. Some have focused on comparing performance in specific countries. For example, Martynova and

Renneborg (2009) investigate the differences between UK and Central European acquisitions and establish that the post announcement cumulative abnormal returns of UK targets are positively influenced by withdrawal of bids since investors are relieved at the announcement of bid withdrawal, as they expect more profitable bids, thus leading to the increase in abnormal returns.

Goergen and Renneboog (2004) distinguish between the wealth effects of domestic and cross-border acquisitions within Europe. Using long windows, they establish that the difference, although not statistically significant, depends on the status of the bids. Ekkayokkaya et al. (2009) reveal a significant difference in the gains from acquisitions within and outside the EU. Though there is a perceived decline in the number of merger activities in the EU, this has been affected by the worldwide increase in corporate restructuring. Campa and Hernando (2004) assert that the lack of a surge in cross-border transactions within the EU is an indication of legal, economic and cultural barriers to financial integration existing in the EU.

Ongena and Penas (2009) investigate bondholders' wealth effects of acquirers in domestic and cross-border European bank mergers that occurred over the period 1998−2002, and concluded that the abnormal returns to bondholders of domestic mergers are higher than those of the cross-border banks. Their results indicate that domestic banks' bondholders experience abnormal returns of up to 5% higher than those participating in the cross-border mergers especially if the acquirer bank comes from a country that has strict banking regulations. This finding is also supported by Aw and Chatterjee (2004) for UK acquisitions. Their results indicate that domestic acquisitions yield better returns than cross-border acquisitions, particularly those acquiring US targets. In particular, domestic acquirers show positive but non-significant abnormal returns in the six months following the merger announcement while cross-border acquirers are found to have significant negative returns. Various other studies, such as Danbolt (1995), Conn (2003) and Black et al. (2003), support this finding while examining cross-border acquisitions of publicly quoted targets. For instance, Conn (2003) observes that the resonant conclusion of the 15 cross-border merger studies reviewed is zero or negative abnormal returns to both the UK and the EU acquirers. Such returns are also common in domestic acquisitions (Sudarsanma and Mahate, 2003).

However, more recent studies have expressed diverse opinions with regard to profitability, efficiency or wealth generation in comparisons between domestic and cross-border acquirers. Mangold and Lippok (2008) compare shareholders' wealth gains of cross-border and domestic acquirers among German firms, and find that mergers with non-EU targets generate positive abnormal returns while those with EU targets result in significant negative returns. Their findings also indicate that domestic acquirers create wealth, while cross-border acquirers destroy wealth. The wealth destruction in cross-border acquisitions can be explained by the difficulties inherent in the post-merger integration of the entities owing to cultural, legal and economic obstacles.

The above assertion is supported in a study of wealth effects for EU banks by Lensink and Maslennikova (2008) who find that domestic bank acquirers create shareholder value while cross-borders acquirers do not. Their study investigates the geographic and product market diversification hypotheses in which they applied the excess demand and the barriers to entry theories (Brewer et al., 2000) in order to explain how financial deregulations might influence cross-border integration of banks. The excess demand theory posits that as geographical restrictions to mergers are eliminated, the number of bidders competing for a given target will increase. This in turn increases the purchase

price paid by the acquirer. In most cases, the target might be overpriced with the subsequent long run effect of underperformance in relation to the abnormal returns of the merged bank.

However, some studies support the assertion that domestic mergers create more value than cross-border mergers. For example, Bertrand and Zitouna (2008) find that the target performance in EU cross-border and domestic mergers differ significantly. The efficiency gains are found to be stronger in cross-border than in domestic mergers, and the difference is explained by the mechanism of the European economic integration process. The study debugs fears cast on cross-border acquisitions as they help enhance both shareholders value and the domestic economy.

It is often argued that, for the cross-border acquirers to create more profits and wealth to the shareholders, they have to be distinctive in size and operation. Anand et al. (2005) add that only cross-border acquirers with multinational scope are capable of creating more profit and wealth for the shareholders. The implication is that only cross-border bank acquirers that are conglomerates are capable of generating more profits and returns for the investors. However, Ecko and Thornburn (2000) and Gregory and McCorriston (2004) study both private and quoted cross-border mergers involving multinational firms but find no evidence of significant returns. Longstreth (1990) identifies managerial control and level of investors' participation as factors improving shareholders wealth.

Hernando et al. (2009) in their study of EU bank mergers assert that the characteristics affecting the likelihood of acquisition are not much different between cross-border and domestic banks, but find that size and profitability are the most significant determinants differentiating between cross-border and domestic mergers. However, they find that cross-border acquirers are less likely to increase market share in the target domestic market. Cross-border acquirers are often attracted by the possibility of having a higher rent which might be readily available in more concentrated markets.

Another factor explaining the difference in the long run merger performance of domestic and cross-border acquirers is associated with cultural differences. Conn et al. (2005) suggest that cultural differences remain an odd for the cross border acquirers especially when integration and acculturation are vital factors in the process. The greater the cultural gap, the worse the problem of the success of the deal for cross-border deals as opposed to domestic ones. However, taxes, accounting standards, the legal system and exchange rate volatility are found to have no significance in the returns and performance of the acquirers.

3 Studies on performance of domestic and cross-border mergers

The use of accounting-based data as a basis of measuring firm performance is quite common (Thanos and Papadakis, 2012; Salvary, 2003). While some studies have judged performance based on the stock market reaction around the announcement date of the merger, others have hinged judgement on the returns accruable to the investors. However, performance attribution considered alone can be misleading (Bertrand, 2005). Olson and Pagano (2005) indicate that any meaningful evaluation of a merger should be based on the acquirer's long-term stock price performance rather than the short-term. Such long-term performance will include the returns to investors, dividend payout, and the stock price subsequent to the merger deal. Jacobs et al. (2012) used several accounting

and economic measures in estimating the performance of large firms with low cumulative abnormal returns on equity.

Some important measures of merger performance apart from profitability include overlay strategy and elements of the returns to the assets (Houston and Ryngaert 1994; Mulvey et al., 2006) which can further improve the merged entity's performance. These are cautious measures since accounting data may not provide the correct state of the merged bank in the short run especially in terms of costs and returns (Nnadi, 2009). Therefore, it is reasonable to assume that an efficient market may provide a better understanding of the market performance than the use of accounting data, since stock prices are mostly unbiased compared to financial accounting data that are often subjected to management influence.

Previous financial performance of banks involved in mergers could be a crucial factor in the determination of the expected returns to shareholders. However, Berger and Humphrey (1992) argue that a deal involving an efficient bank acquiring an inefficient bank may result in reduction in operating costs through the elimination of X-inefficiencies. The contention is that the acquiring bank should be more profitable than the acquired and the revaluation of the share prices of the both banks should be related to the difference in their profits. This argument is supportive of the studies of Houston and Ryngaert (1994) and Morck et al. (1989) who find a significantly higher abnormal return in bank mergers involving more profitable bidder banks. Thus, bidder banks with a strong record of high profit profile will tend to produce merger deals which are more wealth creative than those where bidders have weak profit background.

An expected overall impact of good merged banks would be an improvement in the lending rates and access to credit facilities to customers. Sapienza (2002) shows that when a merger involves domestic banks operating in the same geographic area, borrowers tend to benefit from good lending rates particularly if the acquired bank has small market shares. The findings of this study shows support for the argument that small borrowers benefit more in domestic mergers whereas large cross-border acquirer banks tend to do away with the small borrowers.

In contrast, according to the claim made by Scott and Dunkelberg (2003), mergers have no noticeable effect on the ability of small firms to obtain loans but could trigger increase in poor service quality by small firms. However, when banks merge, the acquirer determines the merged bank's lending policy. If the acquirer does not have a significant lending culture, this could impact on the small entrepreneurs who may find it difficult benefitting from the merger. Peek and Rosengren (1997) argue that a significant number of small banks who are involved in mergers usually have a business loan portfolio. The impact of this is the eventual promotion of small business financing. Thus the impact of mergers is often judged on the amount of support given to small business lending.

Kosmidou et al. (2004) applied multi-criteria analysis using financial variables to compare the performance of domestic and cross-border banks in the UK. Their study reveals that on average, domestic banks have higher operating performance. Specifically, the domestic banks record high performance on the rate of their return on equity, loans to short-term funding ratio and net interest revenue to total assets. Their study supports the 'home advantage hypothesis' which assumes that domestic banks are more efficient than foreign banks in their operational performance due to their knowledge of the local environment.

4 Methodology: event study, regression model and hypothesis

The study applied the market model of the event study, using a window of 61days and an estimation period of 100 days. The sample consists of 62 EU banks deals, of which 42 are cross-border and 20 domestic, with a minimum deal value of €12 billion completed between the periods 1997 and 2007 (see Appendix for the list of countries and the number of banks involved in transactions each year). The sample of deals was obtained from the Thomson Reuters database.

The normal returns are defined as the non-event returns that would have occurred in the absence of the event. The abnormal returns are the actual returns that occurred because of the announcement of the event minus the returns that would have occurred without the event. The cumulative abnormal returns (CARs) are the aggregate of all the abnormal returns (AR).

The abnormal return (AR) is estimated using the market model as:

$$AR_{jt} = R_{jt} - \alpha_j - \beta_j \times R_{mt} \tag{1}$$

where AR_{jt} is the abnormal return on share j for each day t in the event window; β_j is the slope term of the return for stock j measured over the estimation period; R_{mt} is the return on the market m for each day t in the event window; R_{jt} is the return on share j for each day t in the event window; α_j is the intercept term for share j measured over the estimation period.

The abnormal returns were standardised to cater for the different degree of event impact. This is done by weighing the abnormal returns by the standard deviation. The purpose of the standardisation is to ensure that each abnormal return has the same variance (Serra, 2002). Thus, by dividing each firm's abnormal residual by the standard deviation over the estimation period, each residual has an estimated variance of 1 and thus defined by the equation:

$$SAR_{jt} = \frac{AR_{jt}}{\sqrt{S^2 AR_{jt}}} \tag{2}$$

where SAR_{jt} is the SAR for firm j at time t and AR_{jt} is the AR for firm j at time t.

$\sqrt{S^2 AR_{jt}}$ = standard deviation of the AR for the firm j at the time t.

Square root of the variance of the AR for firm j at the time t equals the standard deviation of the AR for the firm j at the time t. The variance is given by the equation:

$$S^2 AR_{jt} = \sum_{t=-100}^{-31} \frac{\left[\left(AR_{jt(est.\ period)} - \overline{AR}_{j(est.\ period)}\right)2\right]}{D_{j-2}} \times \left[1 + \frac{1}{D_j} + \frac{\left(R_{mt(event,\ window)} - \overline{R}_{m(est.\ period)}\right)2}{\sum_{t=-100}^{-31}\left(R_{mt(est.\ period)}\right) - \overline{R}_{m(est.\ period)}2}\right]$$

where $S^2_{AR_{jt}}$ is the variance of the AR for firm j at time t; D is the number of observed trading day returns for firm j over the estimation period; $R_{mt(event\ window)}$ is the return on the market at time t over the event window; $R_{m(est.\ period)}$ is the mean return on the market at time t over the estimation period; $R_{mt(est.\ period)}$ is the return on the market at time t over the estimation period.

The cumulative abnormal returns (*CARs*) of the acquirer banks were obtained by first aggregating all the abnormal returns in the sample in order to draw the total inferences for the event under consideration (MacKinlay, 1997). The standardised cumulative abnormal returns (SCARs) were then calculated over the event period to ascertain the effect on the period surrounding the announcement of the mergers. The purpose is to determine the significance of the SCAR in both domestic and cross-border acquired banks. Although the event study method is very popular in finance (Frankfurter and McGoun, 1995), there are little known studies that have applied the SCAR methodology in combination with a long window to examine both domestic and cross-border acquired EU banks.

Based on prior studies, our hypothesis seeks to establish whether the impact on shareholder value and the main drivers of profitability differ between domestic and cross-border acquiring banks. The general hypothesis is thus stated as:

H_0 Cross-border and domestic mergers have different impact on shareholder value and profitability for the acquiring banks.

Given the ease and ability of cross-border acquirers to attract capital, we posit that banks involved in cross-border mergers are far more likely to outperform the domestic acquired banks. Although the literature provides diverse findings on the performance of EU cross-border versus domestic mergers, we consider that the mega size of the banks merger deals used in the sample makes our research different from previous studies.

We used a hierarchical regression model to test the profitability hypothesis using data for both domestic and cross-border acquiring banks. The profitability equation is formulated using variables that are commonly employed in previous studies (Aw and Chatterjee, 2004; Berger et al., 2004) and include net interest income (*NII*), cost-to-income ratio (*CIR*), equity to asset ratio (*EQTASS*), loan to assets (*LOANTAS*), loan provisions to total assets (*PROVTAS*), and loss provisions to interest income (*RISK*) as the independent variables. Return on equity (*ROE*) is the measure of profitability used. The profitability regression is thus specified as:

$$Profitability_{it} = \beta_0 + \beta_1 NII_{it} + \beta_2 CIR_{it} + \beta_3 EQTASS_{it} + \beta_4 LOANTAS_{it} + \beta_5 PROVTAS_{it} + \beta_6 RISK_{it} + e_{it}$$

The event window employed to capture abnormal returns is 61 days. Some studies favour short windows of less than five days (Andrade et al., 2001; Mulherin and Boone, 2000; Campa and Hernando, 2006), which are prone to insensitivity to the chosen model for the expected returns; whereas a longer window takes into consideration possible bid revision and competitions (Conn et al., 2005). Using a long window also ensures that all possible factors that may influence the abnormal returns, such as post-merger events and the response of the market thereafter, are captured. Aw and Chatterjee (2004) opine that a longer window and estimation period ensure sufficient observations are achieved for statistical accuracy without running any risks of being far from the test period.

Thus, the present study leans towards using long-term window of −/+30 days (61 days) and an estimation period of 100 days in order to capture the short market reaction of the merger announcement, and the profitability regressions (using financial ratios) to evaluate the long-term operational performance of the merged entities. Zollo and Meier (2008) confirm that long windows are far more reliable than short windows. This argument hinges on the widespread evidence of market imperfection associated with mergers, the effect of which can be mitigated by using a longer window. In fact, short windows are deemed to give misleading results since they capture more dominant cognitive performance. This research therefore takes a cautionary step to suggest the use of a longer window in estimating abnormal returns. Furthermore, we employ key financial ratios in profitability regressions to evaluate the operational performance of the bank mergers that occurred over a time span of 11 years. Such a long evaluation period is not common in previous studies of merger performance.

5 Event studies results

The results shown in Table 1 and Figures 1 and 2 provide empirical insight on the pattern of the abnormal returns. While the cross-border acquirers show significant negative SCARs, the domestic acquirers have insignificant SCARs. Using 61 days window (+/−30 days plus the event day), it can be established that many of the significant returns of the cross-border mergers occurred after announcement. The domestic banks show no significant returns throughout the event window.

Table 1 Result of the cumulative total standardised abnormal returns

Event days	*Cum TSAR+*	*Z-stat*	*P-value*	*Event days*	*Cum TSAR*	*Z-stat*	*P-value*
−30	−12.25	−2.86	0.004*	18	−34.14	−2.80	0.005*
	(−0.74)#	(−0.16)	(−0.87)		(−10.35)	(−0.50)	(0.61)
−26	20.78	2.17	0.03*	21	−27.37	−2.18	0.03*
	(1.87)	(0.38)	(0.71)		(−5.86)	(−0.32)	(0.75)
−25	29.02	2.76	0.006*	22	−33.82	−2.37	0.018*
	(5.14)	(0.91)	(0.36)		(−7.39)	(−0.38)	(0.71)
−12	−38.19	−3.11	0.002*	23	−25.37	−2.07	0.038*
	(−6.01)	(−0.49)	(0.63)		(−8.85)	(−0.49)	(0.62)
−11	−25.38	−2.89	0.004*	25	−28.09	−2.43	0.015*
	(−6.3)	(0.33)	(0.74)		(−9.101)	(−0.38)	(0.70)
10	−28.03	−2.27	0.023*	26	−26.61	−2.68	0.008*
	(−4.63)	(−0.33)	(0.74)		(−11.63)	(−0.52)	(0.60)
11	−32.03	−2.23	0.026*	27	−30.57	−2.47	0.014*
	(−5.57)	(−0.3)	(0.77)		(−14.62)	(−0.58)	(0.56)

Notes: *Significant at 0.05. Only significant returns are shown in the table.
#Figures in parentheses are for domestic mergers and those without are cross-border.
SCAR (cumulative total standardised abnormal returns).

Table 1 Result of the cumulative total standardised abnormal returns (continued)

Event days	*Cum TSAR+*	*Z-stat*	*P-value*	*Event days*	*Cum TSAR*	*Z-stat*	*P-value*
12	−34.81	−2.66	0.008*	28	−39.90	−3.03	0.002*
	(−8.5)	(−0.45)	(0.65)		(−16.86)	(−0.69)	(0.49)
13	−38.6	−2.83	0.004*	29	−38.41	−2.96	0.003*
	(−12.9)	(−0.68)	(0.5)		(−18.33)	(−0.75)	(0.45)
14	−27.3	−2.51	0.012*	30	−25.23	−2.25	0.024*
	(11.43)	(−0.59)	(0.55)		(−21.44)	(−0.98)	(0.33)
15	−28.2	−2.79	0.005*				
	(11.93)	(−0.66)	(0.51)				
16	−24.7	−2.88	0.003*				
	(11.61)	(−0.66)	(0.51)				
17	−41.5	−3.42	0.006*				
	(−8.6)	(−0.47)	(0.64)				

Notes: *Significant at 0.05. Only significant returns are shown in the table.
#Figures in parentheses are for domestic mergers and those without are cross-border.
SCAR (cumulative total standardised abnormal returns).

Out of the 21 significant results in cross-border mergers, five occurred prior to announcement while 16 occurred after. Some reasons can be adduced as to why there are more significant abnormal returns of the cross-border banks after announcement date. The public confidence may have been affected which may trigger upward shock in the stock price of the banks. Since the cross-border bank samples are made up of large international banks, it is apparent that the merger would either build or decrease the confidence in the public. The results are further illustrated in the graphs below.

The graph of cross-border SCARs shown in Figure 1 slopes down deep into negative to about −41.5%, just after the mergers but with an initial rise after the 10th day before falling back. But prior to the announcement, the highest SCAR was 29.02% which occurred on the 25th day before the merger news infiltrated the market. The abnormal returns were at peak just before the announcement date when the information filtered into the market, and fell slowly before day zero. The graph shows more significant negative abnormal returns (as shown in Table 2). The news of the mergers triggered an initial increase but with a subsequent fall in SCARs before the event day, which remain negative after the merger announcement.

Figure 1 Cross-border acquirer banks (see online version for colours)

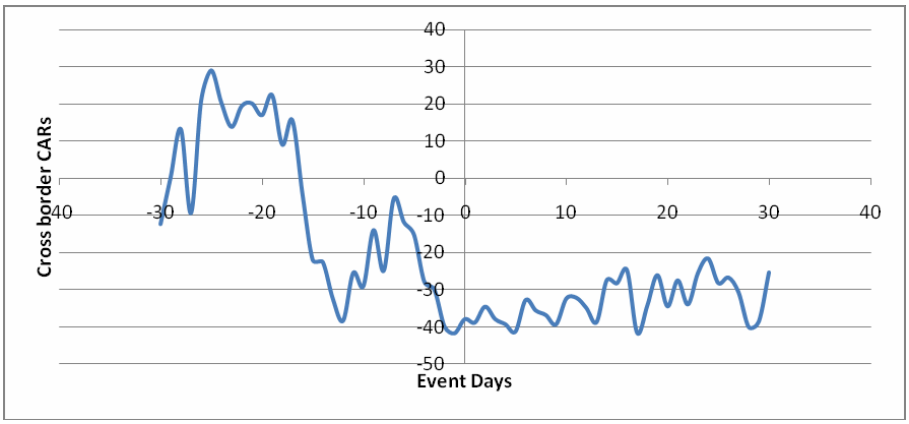

Figure 2 Domestic acquirer banks (see online version for colours)

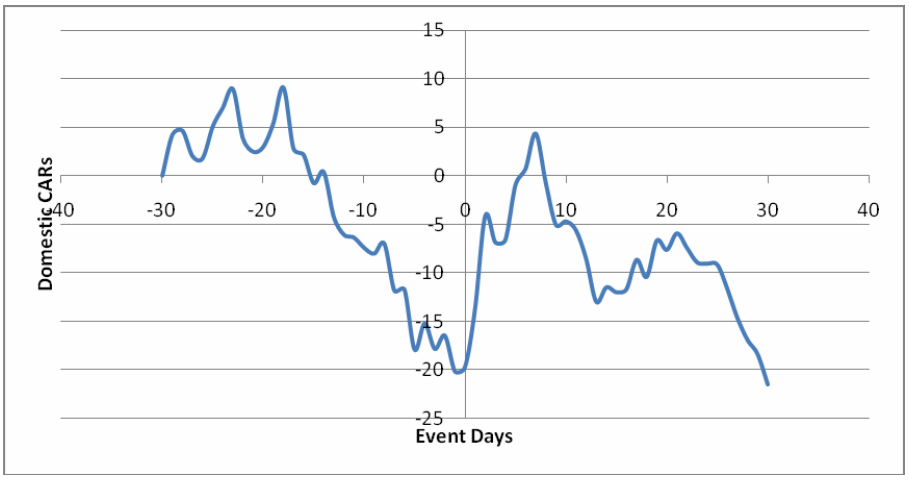

Figure 2 gives a similar graph of SCARs for the domestic mergers. However, the illustration here shows a more sustained positive growth, although this is paradoxical as the SCARs are not significant. An interpretation is that the news of the merger triggered an initial rise in the value of the SCAR before its lowest fall on the event day to up to 20%, which was reversed after the announcement leading to steady growth before eventually steeping downwards. The graph does not reflect the significance of SCAR but shows the pattern in the abnormal returns of the domestic acquirers. It shows that the slopes of the domestic acquirers move faster above zero (positive) than the cross-border acquirers. But the latter has more negative significant results than the former.

Domestic acquirers have been adjudged to possess more knowledge of the local market than foreign acquirers. This may explain the rise in the SCAR, prior to the eventual fall, as the merger news infiltrates the market before announcement. Das and Sengupta (2001) averred to asymmetric information as an underlying factor for the

disparity in the growth of the abnormal returns of the domestic and foreign acquirers. The domestic banks are likely to know more about the preferences of domestic consumers than the cross-border acquirers. Their presence in the domestic market in related lines of activity often results in greater experience regarding household income and expenditure patterns, and household preferences for new products and brands. All this adds up to greater private information in the possession of the domestic banks and their advantageous position in the market during the merger period.

The result obtained from the event study confirms that while the cross-border acquirers have more negative significant SCAR, on aggregate, the domestic acquirers bring relatively better returns to their shareholders. Some of the returns of the cross-border acquirers are highly negative while those of the domestic are negative but relatively low.

There are a handful of M&A studies that have used long event windows in estimating the abnormal returns. Table 2 provides a synopsis of some known studies and the event windows applied. Note that 60 days windows have been used in previous studies, but not in the context of cross-border versus domestic bank merger comparisons in the EU, and none of these studies have used the standardised abnormal return technique.

Table 2 Some M&A studies and the length of the windows

Study	*Domestic/cross-border*	*Country/ continent*	*Period*	*Length of window*
Aw and Chatterjee (2004)	Cross-border	UK/Europe	1991−1996	24
Campa and Hernando (2006)	Both	Europe	1998−2002	30
Ang and Kohers (2001)	Domestic	USA	1984−1996	36
Moeller et al. (2004)	Domestic	USA	1980−2001	36
Rad and Beek (1999)	Both	Europe	1989−1996	40
Black et al (2003)	Cross-border	USA	1985−1995	60
Gregory and McCorrison (2004)	Cross-border	Europe	1985−1994	60
Goergen and Renneboog (2004)	Both	UK/Europe	1989−1999	60
Baradwaj et al. (1990)	Both	USA	1980−1987	60
Lowinski et al. (2004)	Both	Swiss/Europe	1990−2001	63

The current study covers the period 1997−2007 for EU bank mergers and favours a long estimation period for computation of abnormal returns. The time coverage is significant because many EU mergers and acquisitions occurred during the period under consideration. Moreover, the 11 years post-merger profitability assessment period is necessary to properly capture any economic events that could impact on the acquisition results. Olson and Pagano (2005) argue that the success or failure of the banks M&A should not be solely judged on the estimation and announcement period but on the long-term performance of the acquirers. The cumulative standardised abnormal return filters any unbalance resulting from the fluctuations in the returns during the event period and provides a fair basis to evaluate the performance of firms.

6 Robustness check

To further ascertain the impact of the lengthy window used in the event study, we recalculated abnormal results using a short event window and without standardising the abnormal returns for both cross-border and domestic mergers. The results, shown in Table 3, indicate that the abnormal returns occur throughout the event period. The CARs are significant on (−3, 0) and (0, 1) for both domestic and cross-border acquirers and remain significant for the cross-border mergers during the event period.

Table 3 Event study using short window and unstandardised abnormal returns

Event days	*CAR+*	*Z-stat*	*P-value*
−3	−25.04	−2.63	0.18*
	(−9.20)#	(−0.13)	(0.23)*
−1	−20.35	−2.47	0.07*
	(−11.41)	(−0.21)	(0.69)
0	−24.47	−2.31	0.04*
	(−6.14)	(−0.47)	(0.55)
1	−32.56	−2.76	0.36*
	(−7.84)	(−0.21)	(0.07)*
3	−22.53	−3.04	0.003*
	(−10.12)	(−0.12)	(0.02)

Notes: *Significant at 0.05. #Figures in parentheses are for domestic mergers while those without are for cross-border mergers.
+CAR (cumulative abnormal returns).

While cross-border CARs have higher negative values than for the domestic, the above results obviously differ from those with the long window and standardised CARs shown in Table 2. The short window and unstandardised CARs are popular in most M&A studies, but the technique does not consider fluctuations in events leading to and after the event. It assumes that information remains static during the event period. Such assumption has a huge impact on the abnormal results of the mergers. As seen in the results, standardised abnormal return sieves the impact created by circumstantial events surrounding the M&A, eliminating such makes a difference in the significance or otherwise of the abnormal returns.

7 Empirical results

The starting point of the profitability analyses was to ascertain the extent of correlation among the variables[1] (*ROE*, *NII*, *CIR*, *EQTASS*, *LOANTAS*, *PROVTAS* and *RISK*) for both domestic and cross-border acquirers. Table 4 depicts the correlation matrix and indicates that *RO*E of the cross-border acquirer banks has correlations of 0.473 and 0.469 respectively with *CIR* and *RISK*. Similarly, *ROE* of the domestic bank acquirers shows significant positive correlations of 0.472 and 0.433 with *CIR* and *RISK*. In both cases, the correlations are highly significant and indicate that higher profitability is associated with higher cost efficiency (*CIR*) and lending risk (*RISK*) of the acquirer banks. The high

correlation between *ROE* and *RISK* is common as found in previous merger profitability studies (Zhou and Wong, 2008; DeLong and DeYoung, 2007, DeYoung, 1999).

However, the correlations show some differences in the associations of the variables between domestic and cross-border banks. For example, *LOANTAS* shows a negative correlation of −0.302 with ROE for the cross-border banks, an indication that debt level of the bank (or leverage) relates to the higher profitability; whereas PROVTAS has a high positive correlation with ROE at 0.472 for the domestic banks, suggesting that higher profitability of the domestic acquirers is related to more exposure to riskier lending.

Table 4 Correlation matrix of M&A profitability variables

	ROE	*NII*	*EQTASS*	*CIR*	*LOANTAS*	*PROVTAS*	*RISK*
ROE	1						
NII	0.061	1					
	(0.035)						
EQTASS	−0.061	1.000	1				
	(0.212*)	(0.101)					
CIR	0.473**	0.287*	0.287*	1			
	(0.472**)	(0.207)	(0.264*)				
LOANTAS	−0.302*	−0.142	0.142	0.210	1		
	(−0.012)	(0.118)	(0.220*)	(−0.450**)			
PROVTAS	0.069	0.064	0.064	0.067	0.377*	1	
	(0.461**)	(0.304*)	(0.492**)	(0.258*)	(0.080)		
RISK	0.469**	0.176	0.176	0.084	0.078	0.413*	1
	(0.433**)	(0.025)	(−0.039)	(−0.099)	(0.177)	(0.480**)	

Note: **, * significant at 0.01, 0.05 respectively. Figures in parentheses are for domestic and those without for cross-border mergers.

The variables include: return on equity (ROE), net interest income (NII) and cost efficiency ratio (CIR) as (alternative) indicators of profitability associated efficient operation of banks. The equity/total asset (EQTASS) measures the contribution of the capital structure of the bank to its performance. It also explains the profits arising from the quality of the banks' assets. Net loans to total assets (LOANTAS) and the loan loss provision to total assets (PROVTAS) both measure the liquidity of the banks. They capture the banks financial position, investments strategy and funding methods. The loan loss provisions to net interest revenue (RISK) pictures the risky nature of the bank loan and the net effect on its liquidity and profitability while the total assets indicates the size of the banks. Same variables apply for both cross-border and domestic banks acquirers.

8 Regression results

The regression results for profitability are shown in Tables 5 and 6 for domestic and cross-border acquirers banks respectively. In each case, the results are segmented into four models.[2] The Model summary (Models 1−4) provides an indication of the extent of contributions made by each of the variables used in assessing acquirers' financial performance. For example, in the case of the domestic acquirers (Table 5), the *R square*

in Model 4 shows a value of 49.6% on the bank's financial performance, of which 40.6% (*R square change*) is attributable to the addition of the *RISK* variable (over Model 3).

Table 5 Hierarchical regression results of the domestic acquiring banks

Dependent variable = ROE				
Regressor	*Model 1*	*Model 2*	*Model 3*	*Model 4*
Constant	16.605***	17.367***	21.472***	25.961***
	(4.478)	(4.594)	(4.591)	(4.001)
NII	−1.270	−0.931	−0.893	−0.798
	(−2.318)	(−1.456)	(−1.424)	(1.113)
CIR	−0.079	−0.067	−0.076	−0.065
	(−1.472)	(−1.216)	(−1.417)	(−1.144)
EQTASS		−0.067	−0.222	−0.369
		(−1.026)	(−0.683)	(−0.984)
LOANTAS			0.083**	0.250**
			(1.859)	(1.940)
PROVTAS			0.338	0.100
			(0.989)	(0.673)
RISK				0.063**
				(1.757)
R2				0.496
Adj. R^2				0.491
SE of regression				9.110
R2 change				0.406
F-statistics				0.000

Note: ***, **, * significant at 1%, 5% and 10% levels respectively, the value for each estimate is the beta coefficient with t-statistics in parentheses.

The estimated coefficients of *LOANTAS* and *RISK* in Model 4 are positive and statistically significant at the 5% level, with a marginal impact of 25% and 6.3% respectively, indicating that each makes a significant contribution to the profitability of the acquiring banks. Although the rest of the independent variables are not significant, the overall regression is as shown by the value of the F-statistic of 0.000.

Banks use loan loss provisions in creating reserves to cushion the expected losses in their loan portfolios. As both *LOANTAS* and *RISK* measure the exposure to credit risk of the banks after mergers, the significance of these variables are indications that the mergers invoked anticipations in loan to customers and thus creating extra risk in further provisions of bad and doubtful debts after the mergers. However, these are by no means accidental but suggest that the mergers can have a significant shift in the debts and investment strategy of the banks.

Table 6 Hierarchical regression results of the cross-border acquiring banks

Dependent variable = ROE				
Regressor	*Model 1*	*Model 2*	*Model 3*	*Model 4*
Constant	40.468***	45.590***	45.793***	68.402***
	(7.656)	(9.077)	(7.968)	(7.432)
NII	0.863	2.929**	2.933**	2.167**
	(0.981)	(3.096)	(3.034)	(2.240)
CIR	0.445***	0.451***	0.419***	0.497***
	(6.437)	(7.075)	(5.713)	(6.634)
EQTASS		1.628***	1.516***	0.648***
		(4.246)	(3.676)	(4.132)
LOANTAS			-0.046	-0.088
			(-0.826)	(-0.582)
PROVTAS			0.262	0.489
			(0.528)	(1.011)
RISK				-0.046
				(-0.783)
R2				0.514
Adj. R^2				0.510
SE of regression				5.983
R2 change				0.052
F-statistics				0.011

Note: ***; **; * Significant at the 1%, 5% and 10% levels respectively, the value for each estimate is the beta coefficient with t-statistics are in parentheses.

The regression results for the cross-border acquiring banks, presented in Table 6, shows the value of *R square* (Model 4) of 51.4%, of which only 5.2% (*R square change*) is attributable to the inclusion of *RISK* (over Model 3). This indicates that, in contrast to domestic, cross-border bank acquirers are not affected significantly by the risk element influencing their profitability.

However, cross-border acquirer banks' profitability is significantly influenced by cost efficiency and capital strength, as depicted by the positive coefficient estimates of *CIR* and *EQTASS* both of which are statistically significant at 1% level. The magnitude of these estimates shows that, in the order of predictability, *EQTASS* is the strongest predictor of financial performance of the acquiring banks, with a marginal impact of 64.8%, followed by *CIR* with a marginal impact of 49.7% on the profitability. Apart from *CIR* and *EQTASS*, net interest income (*NII*) also contributes positively to the profitability. Their significant contributions explain the overall significance of the regression with the *F-statistics* value of 0.011.

The significance of *EQTASS* is an indication that profits' arising from the quality of the banks' assets is an important variable in enhancing the performance of the cross-border acquiring banks. This finding leans support to Goddard et al. (2004) who assert that an increase in capital-to-assets ratio will subsequently increase the profitability of the banks. In a recent study, Filbeck et al. (2011) also confirm that size of a bank as

measured by it total assets has a significant impact on its performance. Large banks have a greater tendency to exhibit high profitability (Sufian, 2009). Also, efficiency in management of expenses relative to income is important, as confirmed by the significance of *CIR*. Profitability is enhanced when the acquiring bank deploys its capital and utilises its resources effectively in cross-border mergers.

9 Conclusions

This paper evaluates the impact on shareholder value and acquiring banks' profitability based on a sample of 62 large bank mergers that occurred in the EU over the period 1997−2007, distinguishing between domestic and cross-border mergers. A contribution of the paper is the use of a long window (16 days) and standardised cumulative abnormal returns (SCAR) for calculating shareholder value.

For both domestic and cross-border mergers the impact on shareholder value is negative. However, the SCAR of the domestic banks acquirers shows more volatility but no significance while shareholders of the cross-border acquiring banks incur significant negative SCAR usually after the merger announcement. This suggests that cross-border mergers create significant loss of shareholder value for the acquiring banks.

In the case of cross-border mergers, the acquiring banks' profitability is significantly influenced by equity-to-assets (EQTASS) and cost efficiency (CIR) ratios. This implies that to enhance the profitability of the merged entities, efficiency in the management of cost and capital strength are the most important factors. Since cross-border acquirers are usually large, their capital strength is expected to also reflect their size. Hence the result confirms the assertion of Anand et al. (2005) that cross-border acquirers with multinational scope record significant financial gains in terms of profitability and shareholder value. In addition to CIR and EQTASS, net interest income (NII) also has a significant effect on the profitability of cross-border banks.

In the case of domestic mergers, while CIR, RISK and PROVTAS of the acquiring banks correlate significantly with ROE, the regressions regression results indicate that LOANTAS and RISK are the main determinants influencing the post-acquisition profitability of the banks. This implies that for domestic mergers management of risk associated with loan size and portfolio are the key elements in the achievement of profitability for the acquiring banks.

Thus, we find significant differences in the comparison of wealth effects and drivers of profitability of the domestic and cross-border acquiring banks in the EU. In addition to these findings, our study highlights the potential usefulness of applying long windows and SCAR. The use of short windows and unstandardized abnormal returns will imply that fluctuations surrounding the event period are not fully accounted for, the effect of which impacts on the significance of the abnormal returns. The use of standardised abnormal results eliminates the bias in the estimation of event returns by giving equal weighting to all events surrounding the merger while the long window provides a suitable basis for capturing wealth effects of merger announcements over a reasonable amount of time.

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Notes

1 See variable definitions in the Appendix.

2 The essence of the segmentation was to assess the impact of each set of independent variables on the financial performance of the acquirers and assessing the significance of the added variables and contribution to R^2. At the same time, the hierarchical regressions allow for ease of control of the regressors while assessing the rate of impact on the overall result by some other variables of interest (Pallant, 2006).

Appendix

Definition of variables and sample.

EQTASS	the equity to total assets ratio
CIR	the cost to income ratio
LOANTAS	the loan to total assets, which is a proxy for liquidity
RISK	the loss provision to net interest revenue, indicating the ratio of risky lending
PROVTAS	the loan provisions to total assets; this represents the liquidity of the bank
SCAR	the cumulative total standardised abnormal return, proxy for M&A
NII	the net interest income
ROE	return on equity, proxy for profitability

List of EU countries and number of acquisitions in the study

Year	*Country of acquirer*	*Type of acquisition*		*Total per year*
		Cross-border	*Domestic*	
1997	Italy	0	2	2
1998	Spain	1	0	
	France	1	0	2
1999	Spain	1	1	
	Italy	0	1	
	Germany	1	0	
	Austria	1	0	5
2000	Spain	2	0	
	Slovenia	0	1	
	Italy	1	0	
	Germany	1	0	
	United Kingdom	0	1	6

List of EU countries and number of acquisitions in the study (continued)

Year	*Country of acquirer*	*Type of acquisition*		*Total per year*
		Cross-border	*Domestic*	
2001	France	3	0	
	Spain	1	1	
	Italy	2	0	
	United Kingdom	1	0	8
2002	Greece	0	1	
	Belgium	1	0	
	Germany	1	0	
	Italy	1	1	5
2003	Germany	1	0	
	France	1	1	
	Greece	0	1	
	Italy	0	1	5
2004	France	1	0	
	Spain	0	1	
	United Kingdom	2	0	4
2005	United Kingdom	1	0	
	Austria	1	0	
	Sweden	1	0	
	Italy	2	1	
	Germany	0	1	6
2006	Germany	0	2	
	Italy	4	1	
	France	2	0	
	United Kingdom	1	0	
	Spain	2	0	
	Cyprus	1	0	
	Portugal	1	0	14
2007	Italy	1	2	
	Greece	1	0	
	Belgium	0	1	5
Totals		42	20	62